Module 17 Lesson Plan

Preventing Drowsy Driving

Content

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- **THE EFFECT OF FATIGUE ON DRIVING PERFORMANCE**
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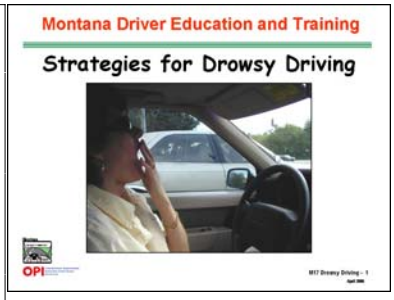
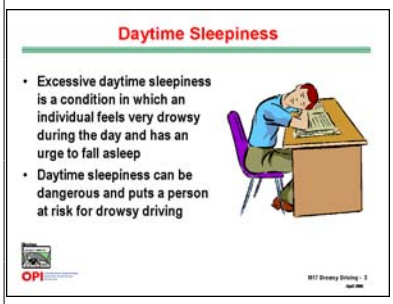
M17—Preventing Drowsy Driving

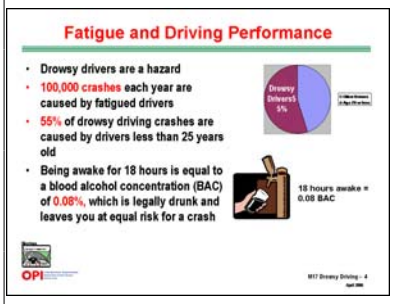
Lesson Objective: The student examines the effect of fatigue on the physical and mental condition of drivers; describes behaviors indicating driver fatigue; explores the hazards associated with driving while fatigued; and explains methods to delay or avoid driving while fatigued and drowsy.

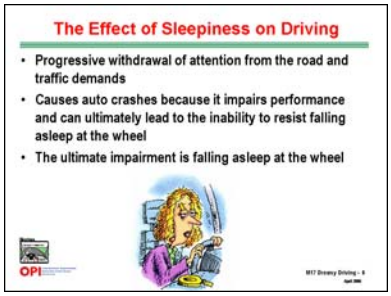
Instructional Topic	Content	Slide
INTRODUCTION	Introduce, model, practice and discuss Sleepiness is most simply defined as "the inclination to sleep"	T17-1
	Sleepiness is technically distinct from fatigue, which has been defined as a "disinclination to continue performing the task at hand"	T17-2
	• Fatigue is a body's response following extended mental or physical activity • Fatigue can result from physical labor as well as repetitive activities such as monitoring a display screen or driving a truck long distances ... An individual can be fatigued without being sleepy, but conditions that produce fatigue also expose underlying sleepiness ... When a person is fatigued, they have a reduced capacity for work, and a reduced efficiency of accomplishment • Sleepiness results from the sleep component of the circadian cycle of sleep and wakefulness, restriction of sleep, and/or interruption or fragmentation of sleep ... Excessive daytime sleepiness is a condition in which an individual feels very drowsy during the day and has an urge to fall asleep when he/she should be fully alert and awake ... Daytime sleepiness can be dangerous and puts a person at risk for drowsy driving, injury, and illness and can impair mental abilities, emotions, and performance	T17-3
THE EFFECT OF FATIGUE ON DRIVING PERFORMANCE	Drowsy drivers are a hazard	T17-4
◆ Crash Statistics	• 100,000 crashes each year are caused by fatigued drivers ... 55 percent of drowsy driving crashes are caused by drivers less than 25 years old • Being awake for 18 hours is equal to a blood alcohol concentration (BAC) of 0.08 percent, which is legally drunk and leaves you at equal risk for a crash	
◆ Driver Performance	The effects of sleepiness and fatigue are very much the same	T17-5
	• Studies have linked sleepiness and fatigue to decreases in vigilance, reaction time, memory, psychomotor coordination, information processing, and decision making	T17-6
	• For the driver the main effect is a progressive withdrawal of attention from the road and traffic demands, leading to impaired performance behind the wheel • Sleepiness causes auto crashes because it impairs performance and can ultimately lead to the inability to resist falling asleep at the wheel • In the case of sleepy drivers, the ultimate impairment is falling asleep at the wheel	

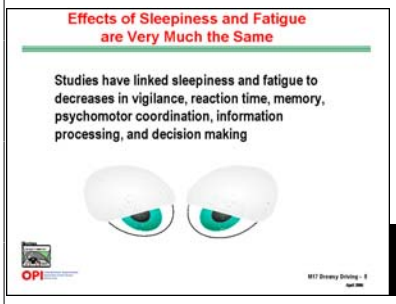
Student Learning Activities	Resources











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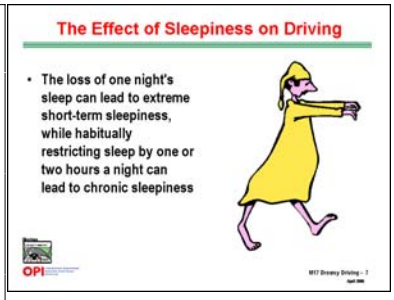
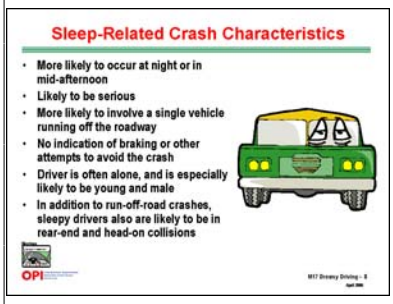
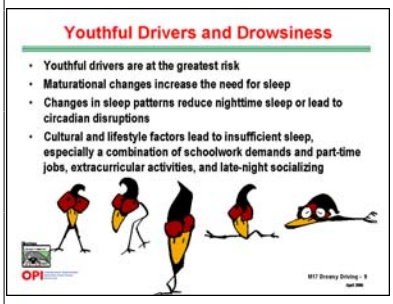
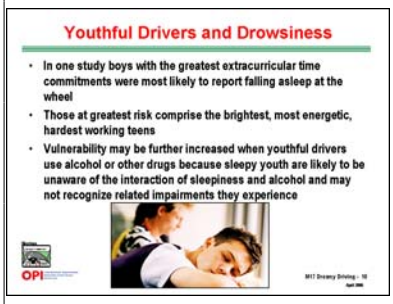
Instructional Topic	Content	Slide
◆ Driver Performance (Cont.)	The loss of one night's sleep can lead to extreme short-term sleepiness, while habitually restricting sleep by one or two hours a night can lead to chronic sleepiness • Sleeping is the most effective way to reduce sleepiness	T17-7
◆ Sleep-Related Crash Statistics	Characteristics of Sleep-related Crashes As a group, sleep-related crashes have certain characteristics that set them apart from other crashes • Compared to non-sleep-related crashes, they are more likely to occur at night or in mid-afternoon, times when people have a natural propensity to sleep • The crash is likely to be serious • They are also more likely to involve a single vehicle running off the roadway on higher-speed roadways • Typically there is no indication of braking or other attempts to avoid the crash • The driver is often alone, and is especially likely to be young and male • In addition to run-off-the-road crashes, sleepy drivers also are likely to be overrepresented in rear-end and head-on collisions	T17-8
	Youthful drivers are at the greatest risk for drowsiness-related crashes because of the following • Maturational changes that increase the need for sleep • Changes in sleep patterns that reduce nighttime sleep or lead to circadian disruptions • Cultural and lifestyle factors leading to insufficient sleep, especially a combination of schoolwork demands and part-time jobs, extracurricular activities, and late-night socializing • In one study boys with the greatest extracurricular time commitments were most likely to report falling asleep at the wheel … The subgroup at greatest risk comprised the brightest, most energetic, hardest working teens • Vulnerability may be further increased when youthful drivers use alcohol or other drugs because sleepy youth are likely to be unaware of the interaction of sleepiness and alcohol and may not recognize related impairments they experience	T17-9 T17-10
	According to sleep experts, teens need at least 8.5 – 9.25 hours of sleep each night, compared to an average of seven to nine hours each night for most adults • Their internal biological clocks also keep them awake later in the evening and keep them sleeping later in the morning • However, many schools begin classes early in the morning, when a teenager's body wants to be asleep • As a result, many teens come to school too sleepy to learn	T17-11

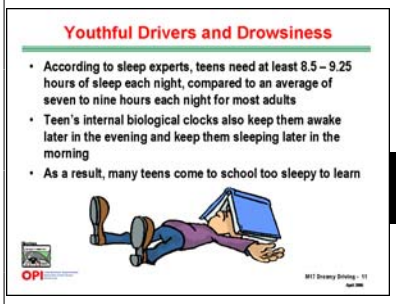
Student Learning Activities	Resources





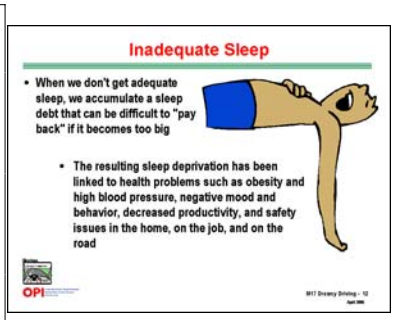


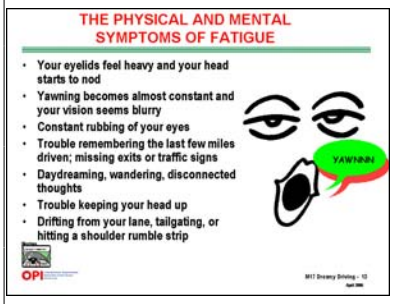


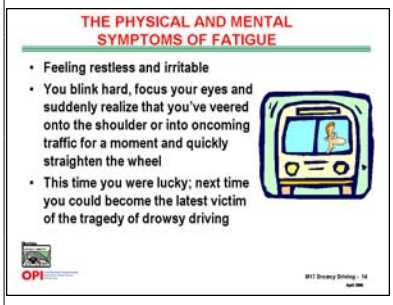


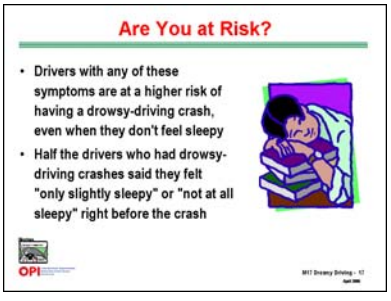
Instructional Topic	Content	Slide
◆ Sleep-Related Crash Statistics (Cont.)	When we don't get adequate sleep, we accumulate a sleep debt that can be difficult to "pay back" if it becomes too big • Sleep experts say most adults need between seven and nine hours of sleep each night for optimum performance, health and safety • The resulting sleep deprivation has been linked to health problems such as obesity and high blood pressure, negative mood and behavior, decreased productivity, and safety issues in the home, on the job, and on the road	T17-12
THE PHYSICAL AND MENTAL SYMPTOMS OF FATIGUE ◆ Warning Signs	Warning Signs • Your eyelids feel heavy and your head starts to nod • Yawning becomes almost constant and your vision seems blurry • Constant rubbing of your eyes • Trouble remembering the last few miles driven; missing exits or traffic signs • Daydreaming, wandering, disconnected thoughts • Trouble keeping your head up • Drifting from your lane, tailgating, or hitting a shoulder rumble strip • Feeling restless and irritable • Blinking hard, focusing your eyes and suddenly realizing that you veered onto the shoulder or into oncoming traffic for a moment and quickly straighten the wheel ... This time you were lucky; next time you could become the latest victim of the tragedy of drowsy driving	T17-13 T17-14
◆ Are You at Risk?	Are You at Risk? Before you drive, check to see if you are: • sleep-deprived or fatigued (six hours of sleep or less triples your risk), • been awake for more than 20 hours, • suffering from sleep loss (insomnia), poor quality sleep, or a sleep debt, • driving long distances without proper rest breaks, • driving through the night, mid-afternoon or when you would normally be asleep, • taking sedating medications (antidepressants, cold tablets, antihistamines), • working more than 60 hours a week (increases your risk by 40 percent), • working more than one job and your main job involves shift work, and • driving alone or on a long, rural, dark or boring road. Drivers with any of these symptoms are at a higher risk of having a drowsy-driving crash, even when they don't feel sleepy • Half the drivers who had drowsy-driving crashes said they felt "only slightly sleepy" or "not at all sleepy" right before the crash	T17-15 T17-16 T17-17

Student Learning Activities	Resources









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Instructional Topic	Content	Slide
◆ Are You at Risk? (Cont.)	Many people cannot tell if or when they are about to fall asleep • If sleepiness comes on while driving, many say to themselves, "I can handle this, I'll be fine" • Yet they're putting themselves and others in danger • What they really need is a nap or a good night's sleep	T17-18
METHODS TO PREVENT DRIVING WHILE FATIGUED AND DROWSY		
◆ Before "Hitting the Road"	Before "Hitting the Road" • Get adequate sleep—most adults need seven-nine hours of sleep to maintain proper alertness during the day • Schedule proper breaks—about every 100 miles or two hours during long trips • Arrange for a travel companion—someone to talk with and share the driving • Avoid alcohol and sedating medications—check your labels or ask your doctor	T17-19
◆ Preventive Actions	Preventative Actions for Drowsy Driving • Watch for the warning signs of fatigue—see above • Stop driving—pull off at the next exit, rest area or find a place to sleep for the night • Take a nap—find a safe place to take a 15 to 20-minute nap • Consume caffeine—the equivalent of two cups of coffee can increase alertness for several hours Caffeine promotes short-term alertness … It takes about 30 minutes for caffeine to begin working so the best thing to do is pull over for a coffee or other caffeinated beverage, take a short nap, and then get back on the road … Keep in mind that caffeine won't have much of an effect on people who consume it regularly • Keep the temperature cool in the vehicle • Limit long distance driving—stop at least every two hours and rest • Keep the eyes moving and check mirrors often • If possible, avoid driving during the peak drowsy times from 2:00 p.m. to 5:00 p.m., and from 10:00 p.m. to 6:00 a.m.	T17-20 T17-21 T17-22
◆ Designing Safer Roads	What rumble strips are and why they are increasingly being used Rumble strips are designed to arouse sleepy drivers before they drive off the road • People who have driven over a rumble strip in the past could personalize the risk, and even seeing the strips on the highway in the future could repeatedly remind people of the message	T17-23

Student Learning Activities | Resources

Are You at Risk?

- Many people cannot tell if or when they are about to fall asleep
- If sleepiness comes on while driving, many say to themselves, "I can handle this, I'll be fine"
- Yet they're putting themselves and others in danger
- What they really need is a nap or a good night's sleep

Before "Hitting the Road"

- Get adequate sleep—most adults need seven-nine hours to maintain proper alertness during the day
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Rumble Strips

- Rumble strips are designed to arouse sleepy drivers before they drive off the road
- People who have driven over a rumble strip in the past could personalize the risk, and even seeing the strips on the highway in the future could repeatedly remind people of the message

Preventative Actions for Drowsy Driving

- Keep the temperature cool in the vehicle
- Limit long distance driving – stop at least every two hours – and rest
- Keep the eyes moving and check mirrors often
- If possible, avoid driving during the peak drowsy times – from 2:00 p.m. to 5:00 p.m., and from 10:00 p.m. to 6:00 a.m.

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Instructional Topic	Content	Slide
◆ Designing Safer Roads (Cont.)	What to do when awakened by driving over a rumble strip Rumble strips act as an alarm clock, alerting drivers to the fact that they are too impaired to drive safely • The key to safety is what the driver does after hearing the alarm … Risk-reducing actions include stopping immediately if possible … Let a more alert driver take over … Stop in a safe location and take a 20 minute nap … Then get off the road and head for a rest stop or motel as soon as possible Rumble strips should not give drivers a false sense of security about driving while sleepy • The strips are useful as alerting devices, but they will not protect drivers who continue to drive while drowsy • Being awakened by driving over a rumble strip is a warning to change sleep and driving behaviors for safety • The strips are not a technological quick fix for sleepy drivers	T17-24 T17-25 T17-26
ASSIGNMENT		
ASSESSMENT		

Student Learning Activities	Resources